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BUREAU OF STANDARDS  
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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR  
RIBBONS, HECTOGRAPH

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 168a

[Revised June 10, 1927. Supersedes Federal Specification Board Specification No. 168]

This specification was officially promulgated by the Federal Specifications Board on June 30, 1924, for the use of the departments and independent establishments of the Government in the purchase of hectograph ribbons.

[The latest date on which the technical requirements of this revision shall become mandatory for all departments and independent establishments of the Government, is September 10, 1927. They may be put into effect, however, at any earlier date, after promulgation.]

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## I. GENERAL SPECIFICATIONS

There are no general specifications applicable to this specification.

## II. TYPES

Hectograph ribbons shall be of the following types:

- (a) *Single-color*.—Purple.
- (b) *Two-color*.—Purple and red.

## III. MATERIAL AND WORKMANSHIP

1. **FABRIC**.—The cloth shall be made of cotton, thoroughly cleaned, combed, and free from waste. It shall be evenly woven and free from an excessive number of avoidable imperfections of manufacture. The weave shall be plain and the yarn single ply.

2. **INKING**.—The ribbon shall be coated on one side only with ink suitable for typewriting on paper. The typed writing shall be transferable to a gelatin-glycerol film or to hectograph clay so that copies on paper can be produced therefrom.

## IV. GENERAL REQUIREMENTS

See Detail requirements.

## V. DETAIL REQUIREMENTS

1. **WIDTH**.—Uniform, and as required for the machine specified in ordering. See VI, 2, (c).

2. **LENGTH**.—*Ribbons wider than 9/16 inch*.—Not less than 9 yards.  
*Ribbons 9/16 inch or less in width*.—Not less than 12 yards.

3. **THREAD COUNT**.—*Warp*.—Not less than 135 threads per inch.  
*Filling*.—Not less than 135 threads per inch. See VI, 2, (b).

4. **THICKNESS**.—Not more than 0.0057 inch. See VI, 2, (d).

5. **INKING**.—Uniform, of the color desired, and otherwise as specified in III, 2.

6. **EDGES**.—Cut and properly gummed; not wavy. See VI, 2, (a).

7. **CHARACTER OF WRITING**.—Satisfactory, as determined by tests VI, 2, (e) to (g).

8. **COPIES**.—Clear and distinct. See VI, 2, (h).

## VI. METHOD OF INSPECTION AND TESTS

1. **METHOD OF TAKING SAMPLES**.—One ribbon shall be sent to the testing laboratory in an original unopened container bearing all of the manufacturer's marks.

2. **TESTS**.—The ribbon shall be examined and tested according to the following methods:

(a) Visual examination shall be made of the ribbon to determine the nature of the edge and the character of the cloth in regard to its

freedom from waste and avoidable imperfections of manufacture, and to ascertain if the cotton had been combed.

(b) The actual number of threads in 1 inch shall be counted in the filling direction at three different places and the results averaged. The total number of warp threads shall be counted and calculated to a basis of 1 inch.

(c) The width shall be determined by laying the ribbon on a flat surface, without tension, and measuring the distance perpendicular to the length between the edges. Three measurements shall be taken at different places in the sample and the results averaged.

(d) The thickness of the ribbon shall be measured at five different points, by means of any suitable gauge, and the results averaged.

(e) The ribbon as received shall be tested on a typewriter or suitable automatic testing machine. If the ribbon as received is on a spool that will not fit the machine used for testing it shall be transferred to a suitable spool.

(f) Place the ribbon in the machine and wind 2 yards of its free end upon the empty spool. This is done so that the ribbon will shift a definite distance while making the following tests.

(g) A sentence about 30 letters in length shall be written 25 times. At the beginning of each line the ribbon shall be reeled back to the starting point.<sup>1</sup> The first line shall be clear and clean, with no blurring of any of the letters. The last line of the 25 shall be distinct and easy to read. The ribbon shall be allowed to stand at rest for one hour, after which another line shall be written. This line shall be as clear and distinct as the third line of the preceding 25.

(h) The writing produced as in (g) shall be transferred to a hectograph pad in the usual way and 25 copies made from it. All of the copies of the first line of writing shall be easily legible.

## VII. PACKING AND MARKING OF SHIPMENTS

Shall be in accordance with the best commercial practice, unless otherwise specified.

## VIII. NOTES

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<sup>1</sup> This is easily done by making a pencil mark across the ribbon at the point where it leaves the spool holder, or at any other convenient fixed point on the machine. The test can not be made by reversing the direction of the ribbon feed at the end of each line, because the ribbon does not travel the same distance in both directions. With some machines it is possible to prevent travel of the ribbon by raising the ribbon-feed pawl. If this can be done, it is preferable to reeling back the ribbon each time.

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